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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/034,901 | 12/27/2001 | George Cintra | 08935-249001 /M-4965 | 1584 |
| 26161 | 7590 | 04/11/2006 | | |
| FISH & RICHARDSON PC P.O. BOX 1022 MINNEAPOLIS, MN 55440-1022 | | | EXAMINER ALEJANDRO, RAYMOND | |
| | | | ART UNIT | PAPER NUMBER |
| | | | 1745 | |

DATE MAILED: 04/11/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | | |
|------------------------------|-------------------------------|-------------------------------|--|
| Office Action Summary | Application No. 10/034,901 | Applicant(s) CINTRA ET AL. | |
| | Examiner Raymond Alejandro | Art Unit 1745 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03/21/06 (Appeal Brief) & 03/20/06 (Amend.).
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 52-61 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 52-61 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 13 March 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

This office action is being provided in reply to the Appeal Brief dated 03/21/06 and the amendment dated 03/20/06. Prosecution on the merits of this application is reopened on claims 52-61 considered unpatentable for the reasons indicated below. The 35 USC 103 rejections have been withdrawn in response to the arguments and remarks advanced by the applicant in the above-mentioned Appeal Brief and for the reasons of record. However, the present claims are again rejected in view of a newly discovered reference. A Rejection based on the newly cited reference follow.

Claims Disposition

1. The amendment dated 03/20/06 cancelling claims 1, 3-15, 45-51 and 62 has been entered and made of record.
2. In sum, claims 1-51 and 62 have been cancelled.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 52-53, 55 and 57-60 are rejected under 35 U.S.C. 102(b) as being anticipated by Chu 5582623.

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The instant application is directed to a method of making a battery electrode wherein the disclosed inventive concept comprises forming a cathode layer and removing the substrate. Other limitations include the cathode mixture; the substrate material; the current collector; the binder and the continuous process.

As to claim 52 and 60:

Chu discloses methods of fabricating rechargeable positive electrodes (TITLE) including the step of forming the active electrode involving a step of depositing a layer of an electrode mixture on a substrate (COL 7, lines 21-30); and when a slurry is employed to prepare the electrode, a further step of drying is employed to dry the electrode; the slurry may be dried on a substrate (COL 7, lines 32-35); the dried electrode must be first removed from the substrate, and then affixed to a current collector (COL 7, lines 36-40). Chu clearly discloses that after the electrode film is dried, it is peeled away from the substrate and later contacted to a current collector (COL 14, lines 40-45).

The positive electrode is a composite matrix (a mixture) including active material (COL 10, lines 32-45) and binders (COL 11, lines 60-65); and solvents (COL 12, lines 20-30).

EXAMPLE 1 illustrates the making of the positive electrode film comprising mixing the active material, carbon black (*the conducting agent*); a polymeric material (*which may act as the binder*) in a solution (*encompassing the solvent*). Thus, Chu discloses with sufficient specificity the specific method of making the battery electrode as instantly claimed.

As to claim 53:

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Chu discloses adding binders (COL 11, lines 57-65) and the use of various polymeric materials (COL 10, lines 35-65 & COL 11, lines 33-55). *It is noted that any of these polymeric materials is capable of binding together the electrode components.*

As to claim 55 and 60:

Chu employs a solvent (COL 12, lines 20-30). **EXAMPLE 1** illustrates the making of the positive electrode film comprising mixing the active material, carbon black (*the conducting agent*); a polymeric material (*which may act as the binder*) in a solution (*encompassing the solvent*).

As to claims 58-59:

Disclosed is the addition of conducting agents such as carbon black into the cathode mixture (COL 11, lines 50-57). **EXAMPLE 1** shows the use of carbon black (EXAMPLE 1).

Thus, the present claims are anticipated.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out

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the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

7. Claims 54, 56-57 and 61 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chu 5582623 as applied to claims 53, 55 and 60 above, and further in view of Hamamoto et al 2002/0168576.

Chu is applied, argued and incorporated herein for the reasons above.

As to claim 57:

Additionally, Chu discloses that preferred liquid solvents evaporate quickly so that the resulting film dries completely and before the redistribution of the components can occur (COL 12, lines 25-30). *Thus, Chu's teachings encompass removing a portion of the solvent.*

However, the preceding reference does not expressly disclose the specific binder and solvent.

Hamamoto et al disclose that cathode can be prepared by mixing the cathode active material with a conducting agent, a binder such as polyvinylidene fluoride (PVDF), polytetrafluoroethylene (PTFE); and N-methylpyrrolidone solvent to form a cathode paste which is coated on a collector (*the substrate*) (SECTION 0043, 0044, 0062). **EXAMPLE 1** exemplifies mixing such specific electrode components to form the cathode paste (EXAMPLE 1).

[0043] The cathode can be prepared by mixing the cathode active material with a conductive agent such as acetylene black or carbon black, a binder such as polyvinylidene fluoride (PVDF), polytetrafluoroethylene (PTFE), and N-methylpyrrolidone solvent to form a cathode paste, then coating this cathode paste on a collector such as aluminum foil or a stainless steel lath, drying at 50 to 250° C., followed by compression molding.

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[0062] 80% by weight of LiCoO_2 (cathode active material), 10% by weight of acetylene black (conductive agent), and 10% by weight of polyvinylidene fluoride (binder) were mixed and diluted by N-methylpyrrolidone to prepare a

cathode paste. The paste was coated on an aluminum foil

In view of the above, it would have been obvious to one skilled in the art at the time the invention was made to employ the specific the specific binder and solvent of Hamamoto et al to make the battery electrode of Chu because Hamamoto et al teach that battery cathodes can be prepared by mixing together the cathode active material, conducting aids, solvents and binders. Accordingly, such specific cathode mixture materials are suitable battery electrode components helping to provide a non-aqueous electrolyte battery having satisfactory electric capacity and superior cycle characteristics and storage characteristics.

Response to Arguments

8. Applicant's arguments, see the Appeal Brief dated 03/21/06, with respect to the rejections of claims 52-61 under the 103(a) section have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made as set forth supra.

Conclusion


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Raymond Alejandro whose telephone number is (571) 272-1282. The examiner can normally be reached on Monday-Thursday (8:00 am - 6:30 pm).

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick J. Ryan can be reached on (571) 272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Raymond Alejandro
Primary Examiner
Art Unit 1745



RAYMOND ALEJANDRO
PRIMARY EXAMINER